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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,926	06/27/2003	Ian Stuart Robinson	NG(ST)-6402	7014
26294	7590	07/27/2005	EXAMINER	
TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P. 526 SUPERIOR AVENUE, SUITE 1111 CLEVEVLAND, OH 44114			FILE, ERIN M	
			ART UNIT	PAPER NUMBER
			2634	
DATE MAILED: 07/27/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,926

Applicant(s)

ROBINSON ET AL.

Examiner

Erin M. File

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 9-11, 14-17, 20-24, 27, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 8, 12, 13, 18, 19, 25, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/27/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 20-23, 27, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori et al. in further view of Eckstein et al.

Claims 1, 21, 23, 27, Hori discloses a digital-to-analog converter including a delta-sigma modulator (abstract). Although Hori discloses a frequency source selecting either a first or second signal in accordance with the delta-sigma modulator (abstract), Hori fails to disclose a frequency source that provides a selected one of a plurality of frequency patterns based on a frequency selection input. However, Eckstein discloses a digitally controlled frequency synthesizer where a controller accepts a group address signal from a group address selector for determining the specific frequency pattern to be employed (col. 5, lines 12-15). Because Hori discloses frequency source selection between two sources, it would be obvious to one skilled in the art at the time of invention to incorporate Eckstein's frequency pattern selection into Hori's apparatus.

Claims 2, 4, 20, 30, contain the limitations of Claim 1 as described above. Further, as Eckstein discloses the use of an address signal for determining the frequency pattern, it can be reasonably assumed said frequency patterns are stored in memory.

Claim 3, 22, inherit the limitations of Claims 2, 21 respectively, although neither Hori nor Eckstein disclose the plurality of frequency patterns further comprising delta-sigma modulated patterns associated with the frequencies represented by the plurality of frequency patterns. It would have been an obvious matter of design choice to perform the modulation on the stored frequency patterns, since applicant has not disclosed that storing the modulated patterns solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well storing frequency patterns and then modulating said patterns instead of storing the delta-sigma modulated frequency patterns.

Claim 6, inherits the limitations of Claim 1. The further limitation of comprising a delta-sigma modulator to provide the delta-sigma modulated signal to the digital-to-analog converter based on associated processing of the selected one of the frequency patterns is met by Hori as the device as disclosed by Hori is a digital to analog converter using a delta sigma modulated signal (abstract).

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Claim 29, inherits the limitations of Claim 27. Further, Hori discloses a low pass filter (fig. 14, 500) to filter the analog signal (col. 2, lines 41-45).

3. Claims 9-11, 14-17, 21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori et al. and Eckstein et al. and in further view of Hickling.

Claims 9, 14, 21, contain the limitations of Claim 1, further, although neither Hori et al. nor Eckstein disclose providing the analog signal as a frequency hopping signal that hops between selected ones of the plurality of frequency patterns at a hop rate based on the selection input, Kickling discloses a delta sigma modulator with a digital to analog converter (fig. 4) which he discloses is applicable for use in frequency hopping modulation techniques (col. 1, lines 19-23). Because of the similarity of Kickling's delta sigma modulation to the delta sigma modulator used by Hori, it would be obvious to one skilled in the art at the time of invention to incorporate Kickling's delta sigma modulator into Hori's apparatus.

Claims 10, 24, inherit the limitations of Claims 9 and 21 respectively, the limitation of a filter coupled to mitigate noise in the analog signal provided by the digital-to-analog converter is met by Hori as described in Claim 29 above.

Claims 11, 15 inherit the limitations of Claims 1 and 14. Further, Kickling discloses a one-bit digital-to-analog converter in the delta sigma modulator (fig. 4, 86).

Claim 16, inherits the limitations of Claim 14. Further the limitation of a memory that stores data for the plurality of frequency patterns, the memory providing the selected one of the plurality of frequency patterns in response to the selection input is met by Hori et al. as described in Claim 2 above.

Claim 17, inherits the limitations of Claim 14, further the limitation of a delta-sigma modulator coupled to process the selected one of the plurality of frequency patterns and to provide the delta-sigma modulated signal to the digital-to-analog converter is met by Hori et al. as described in Claim 6 above.

Allowable Subject Matter

4. Claims 5, 7, 8, 12, 13, 18, 19, 25, 26 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin M. File

EF

7/21/2005



**STEPHEN CHIN
SUPERVISORY PATENT EXAMINE
TECHNOLOGY CENTER 2600**